

# Using Innovative Technologies for Manufacturing and Evaluating Rocket Engine Hardware

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Many of the manufacturing and evaluation techniques that are currently used for rocket engine component production are traditional methods that have been proven through years of experience and historical precedence. As we enter into a new space age where new launch vehicles are being designed and propulsion systems are being improved upon, it is sometimes necessary to adopt new and innovative techniques for manufacturing and evaluating hardware. With a heavy emphasis on cost reduction and improvements in manufacturing time, manufacturing techniques such as Direct Metal Laser Sintering (DMLS) and white light scanning are being adopted and evaluated for their use on J-2X, with hopes of employing both technologies on a wide variety of future projects. DMLS has the potential to significantly reduce the processing time and cost of engine hardware, while achieving desirable material properties by using a layered powdered metal manufacturing process in order to produce complex part geometries. The white light technique is a non-invasive method that can be used to inspect for geometric feature alignment. Both the DMLS manufacturing method and the white light scanning technique have proven to be viable options for manufacturing and evaluating rocket engine hardware, and further development and use of these techniques is recommended.

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